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Summary
Utility-Transportation Corridor Study for Montana

The Existing Situation and Options for Future Corridor Selection

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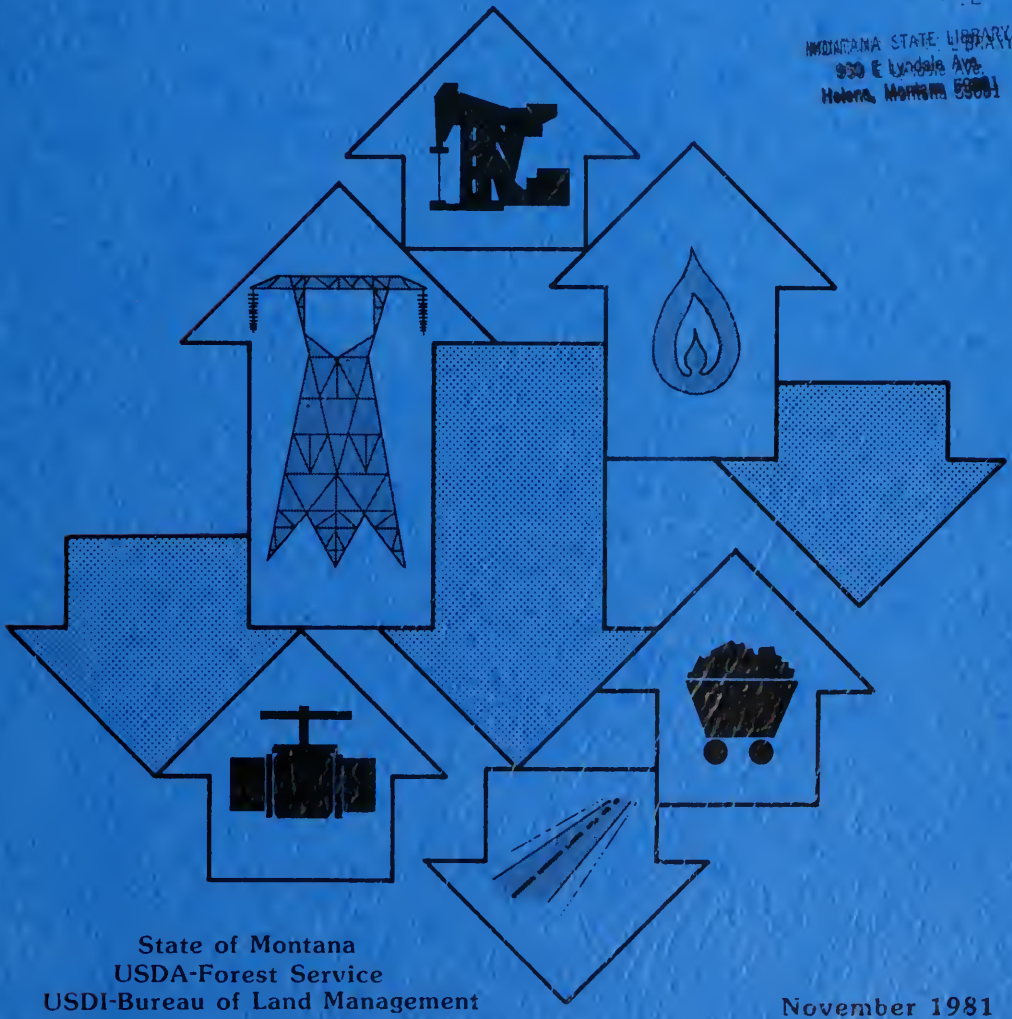

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CONTENTS

INTRODUCTION—CORRIDOR PLANNING FOR MONTANA: A SUMMARY REPORT 1

ASSESSMENT OF THE LINEAR FACILITY SITUATION IN MONTANA 1
- Definitions 2
- Existing and Projected Linear Facilities 2
- Institutional Situation 2
- Paradoxes 3
- Siting Process of Right-of-Way Users 3
- Technical and Engineering Compatibility Consideration 3
- Land Use, Land Ownership, and Social Issues 4

A CORRIDOR SELECTION PROCESS 4
- Approaches for Corridor Selection 4
- Implementation Options 5
- Recommendations 6

REFERENCES CITED 7

INTRODUCTION—CORRIDOR PLANNING FOR MONTANA: A SUMMARY REPORT

The nation's demand for energy self-sufficiency is growing at a time when competition among many types of land uses and resource values is becoming more intense. Many of the energy resources needed to reach the goal of national energy self-sufficiency are located in the western United States. However, much of the demand for these resources comes from major population centers in the Midwest and on the West Coast. Demand for more utility and transportation facilities—especially pipelines, electric transmission lines, and railroads—to transport energy from the resource areas to the centers of consumption is the result. Because most of these linear facilities cross lands with different owners and uses, conflicts arise. Selecting routes for linear facilities is often further complicated by environmental and engineering constraints. Such situations challenge land management and energy facility siting agencies to determine acceptable locations for rights-of-way and to devise effective right-of-way planning policies and procedures.

National concern for meeting future right-of-way needs while protecting the environment led to legislation authorizing federal land management agencies to designate utility and transportation corridors on federal lands. Corridor planning on federal lands in the West is the subject of an interagency agreement between the U.S. Forest Service (FS) and the U.S. Bureau of Land Management (BLM). Efforts are also underway which involve individual states and the Western Interstate Energy Board, an organization representing the western states. The State of Montana, Region 1 FS, and Montana Office of the BLM agreed to a joint corridor planning study due to mutual state and federal concern over the effect of corridor planning on public lands in Montana and adjacent or surrounding private and state lands. The *Utility-Transportation Corridor Work Management Plan for Montana* describes this cooperative effort (State of Montana, USDA, USDI, 1980).

The State of Montana and the federal agencies are working toward goals to: (1) reduce the social, economic, and natural resource impacts of linear rights-of-way; (2) manage land uses on federal and state land for the highest public benefit; (3) achieve an efficient, cost-effective and coordinated public decision process for siting and managing linear rights-of-way; and (4) ensure that utility and transportation linear right-of-way needs are met in land-use planning. In partial fulfillment of these goals, state and federal agencies have developed cooperative corridor planning objectives, analyzed the existing right-of-way siting and management situation, and evaluated approaches for corridor identification on federal lands in Montana. The results of this effort are summarized below.

ASSESSMENT OF THE LINEAR FACILITY SITUATION IN MONTANA

Corridor planning for federal lands in Montana began in October 1980 with two key objectives: (1) to document the existing linear facility situation and provide insight into future linear right-of-way needs in Montana; and (2) to document existing authorities, responsibilities, and policies for siting linear facilities in Montana.

Only a few previous studies and reports have examined the subject of right of way management and potential need for future linear facilities (USDI 1975, USDOE 1977, WUG 1980). The work of these previous studies, an examination of projected future facility needs, and communication with industry highlight the complexity and uncertainty involved in planning for right-of-way needs.

Definitions

Various kinds of corridors are differentiated by their use. They include "planning corridors," "de facto corridors," and "designated corridors."

Planning corridors are generally broad rather than narrow areas which are evaluated to determine where specific rights-of-way should be placed. They are usually identified in conjunction with environmental impact statements and evaluations of specific project proposals.

De facto corridor is a term used to describe an area in which one or more linear facilities already exist. Such a land use pattern probably developed in response to considerations such as topography and ease of access which prompted closely parallel rights-of-way. This pattern did not develop with the intent of establishing the best corridor based on environmental considerations. Both of these uses of the term have the general characteristic of a long corridor.

In contrast, a **designated corridor** is a linear area of land with legally defined and recognized boundaries and capacities having environmental or engineering advantages over other areas for the location of present or future rights-of-way. These areas are identified and designated by legal public notice. The term designated corridor refers to either a short or long strip of land with a defined width.

Windows are usually short, narrow, passageways through constrained areas which are the most feasible potential locations for linear facilities, considering engineering and/or environmental factors for linear facilities. Such passageways may be initially identified through land use planning processes, but usually require more detailed project specific analyses to

determine their ultimate suitability as facility locations. A mountain pass through which facilities may be routed is a typical window, although constraints are not limited to topography. **Exclusion areas** are those areas which linear facilities would not be legally permitted to cross, while **avoidance areas** are areas that pose particular environmental impacts which would be difficult or impossible to mitigate or have characteristics which impose unusual engineering constraints. It is assumed that these areas will normally not be crossed, or would require mitigating measures if they were crossed.

Existing and Projected Linear Facilities

The patterns of facility placement in Montana have been influenced by resource location, market locations (both interstate and intrastate), topography, and economics. In the mountainous western third of Montana, facilities are concentrated in river valleys and lower elevation mountain passes. Topography and economic limitations defined where facilities could easily be placed and where engineering design requirements could be met. For example, highways and railroads were placed in these areas due to grade limitations. Electric transmission lines, pipelines, and communication lines were built nearby because the locations offered easy access for construction and maintenance or were primary routes for crossing the mountains. In the eastern half of the state, topography is much less of a constraining factor. Nevertheless, highways, railroads, communication lines, and some electric transmission lines and pipelines have been located together for easy access and maintenance even where these routes were not the shortest for some facilities. Indications are that increased construction costs will influence future placement of electric transmission lines and pipelines; project sponsors will seek straighter and, therefore, shorter routes in the eastern part of the state and, where feasible, in the mountainous part of the state.

In addition to topographic factors and past trends in facility siting, interstate and intrastate utility and transportation facilities were sited to connect the major urban centers of the state. In some cases, urban areas have expanded and now pose land use constraints on the siting of future facilities. A major source of conflict with the preservation of right-of-way areas is the development of incompatible land uses that have often occurred since existing facilities were sited. Thus, in some areas, the existing locations may not be the best location for new facilities. Based on an initial screening, twenty-one areas in Montana have been identified that exhibit possible problems for the placement of new facilities due to potential land use conflicts or represent topographic constraints.

Electric transmission lines are the most probable type of new facility that may be needed in Montana over the next decade. Also, there are projections for new pipelines, especially if increased development of Montana oil, gas, or coal occurs.

Although both intrastate and interstate rights-of-way may be expanded, the number of facilities needed depends on the following unresolved questions: (a) How and in what form will energy from the Montana-Wyoming coal fields be moved to use or export centers? (b) How much future hydroelectric generation expansion will occur and where will it be located? (c) What impact will conservation have on future energy demand and energy use? (d) What impact will upgrading or rebuilding existing electric transmission facilities have on new right-of-way needs? (e) What will be the future demand for electricity? (f) What types of transportation systems will be needed? (g) What emphasis will be placed on mine-mouth versus load-center electrical generation? (h) How will technology affect right-of-way needs?

Institutional Situation

An important distinction exists between right-of-way decisions and corridor decisions. Right-of-way decisions result from investigations of different possible routes for a facility and are part of a project specific review. Corridor designation decisions are part of the land management planning process on federal lands and can be made without a specific project proposal. This distinction is a key point of difference between existing federal and state authorities. Federal agencies have authority to designate corridors; state agencies do not have such authority although they can make right-of-way decisions on a case-by-case basis through permit, easement, grant, certification, or other actions.

Forest Service and Bureau of Land Management direction for corridor planning and management procedures is just emerging. The Federal Land Policy and Management Act (FLPMA), and other laws such as the National Forest Management Act (NFMA) and the Mineral Leasing Act as amended, give the FS and BLM authority to designate corridors on federal lands. Recent regulations for implementing this responsibility reflect the complexities of the present corridor planning and management situation. For example, while NFMA regulations encourage the use of corridors, their use is not required. Although corridors are encouraged by law, a designated corridor would not preclude granting a separate right-of-way where federal agencies determine such an action appropriate. In short, the procedural situation concerning defining the need for, use of, and feasibility of designating corridors is not well established.

State agencies have the authority to influence the location of individual facilities by granting permits or easements and siting certain energy facilities proposed under the Major Facility Siting Act (MFSA). Comprehensive analysis of projects not covered under MFSA depends on a decision that granting permits or ease-

ments for a facility would be a major state action. Such a decision would cause the project to be evaluated under guidelines set forth in the Montana Environmental Policy Act (MEPA), including the environmental impact statement process. Where state agencies have authority it is fairly well defined, although litigation is pending concerning the question of MFSA jurisdiction over federally sponsored linear projects such as electric transmission lines built by the Bonneville Power Administration or the Western Area Power Administration.

Right-of-way decisions in Montana by state and federal agencies have been made in the context of siting individual facilities. Joint reviews were attempted in some cases like the Colstrip transmission project and the Northern Tier Pipeline. For various reasons these efforts failed and the absence of joint reviews remains a serious problem because of unresolved jurisdictional interpretations. For example, the State of Montana maintains that the MFSA requires state approval of the entire route for certain energy projects. On the other hand, federal approval is required where any right-of-way would cross federal lands. Regardless of the legal implications involved, joint review of future projects is considered vitally important to coordinate decisions on projects that cross federal, state and private lands in Montana.

Under existing law, state participation in corridor planning in Montana is limited to the development of cooperative processes for designation of corridors by federal agencies on federal land. The issue of state corridor designation authority has not been publicly debated nor has enough analysis been completed to decide whether such authority is necessary or desirable. However, cooperative corridor planning on federal lands and joint review of individual projects are emerging as important factors for state review of future energy projects under either MFSA or MEPA.

Paradoxes

In addition to the discussion above concerning the respective state and federal statutory and policy situations, there are a number of problems, apparent paradoxes, and gaps in the laws or policies which will influence joint corridor planning in Montana.

1. FLPMA authorizes designation of corridors "without further review" where existing facilities are already present on federal lands. This law stresses federal dominance on public lands and indicates a lack of emphasis toward intergovernmental efforts to solve public and private land ownership dilemmas. Inverse condemnation of private lands is a major problem which may be intensified by aspects of existing law. Other federal legislation stresses the importance of coordinating action on federal lands with those responsible for adjacent lands and, where appropriate, using an intergovernmental decision process. This contradiction exists between statutes, between the policies of different agencies, and between different policies within a single agency. State and federal agencies have initiated cooperative approaches in Montana to address this problem.

2. Policy guidance of FLPMA is for nonproliferation of separate rights-of-way and endorsement of corridors where rights-of-way presently exist. Such a policy fails to recognize that no analysis has been done to establish that existing rights-of-way are the best location for additional linear facilities. Furthermore, local and regional pressure is frequently toward placing new linear facilities in uncongested areas because existing rights-of-way are located in areas where competition among land use and human settlement patterns is greatest.

3. State policy expressed in the MFSA and in positions taken by Montana's Congressional delegation places emphasis on public lands as the preferred location for facilities if economic considerations are equivalent to those on private land and if environmental compatibility criteria are met. This fails to recognize possible land use and management implications or the obligation of both federal and state agencies to balance many complex resource values in making right-of-way siting decisions.

Siting Process of Right-of-Way Users

Owners and operators of linear facilities include utilities, pipeline companies, federal power marketing agencies such as Bonneville Power Administration and Western Area Power Administration, and state and federal highway authorities. The latter two categories are government agencies that provide public services. Collectively, these companies and agencies can be classified as right-of-way users.

Decisions by right-of-way users to site a new linear facility take into account such factors as cost, terrain, safety, reliability, and compatibility with existing facilities and the environment. Industry standards and government regulations often dictate facility location and design. For example, the electric utility industry has established codes on safety and reliability factors for electric transmission lines; the pipeline industry has established pipeline design and location criteria that are included in federal regulations governing construction of liquid and gaseous pipelines; highways are designed, constructed, and maintained according to federal highway operations criteria; and railroad and communication systems follow standards for reliability and safety set by their industries. Right-of-way user policies are primarily designed to protect the integrity of their systems.

Technical and Engineering Compatibility Consideration

Economics is often a more central factor than technical

feasibility in determining whether rough terrain will be crossed, or whether design features will be incorporated to allow otherwise incompatible facilities to be sited in relatively close proximity. Engineering and construction techniques can achieve compatibility with most terrain and environmental factors if cost is not a limitation. Terrain greatly limits the placement of highways and railroads because of maximum allowable grades and in the case of pipelines because of interrelationships between pressure restrictions and steep grades. Electric transmission lines are affected least by terrain factors since steep areas and water bodies can be spanned if necessary. Both electric transmission lines and pipelines follow as straight a route as possible to reduce the length and cost of the line. Because cost is such a central concern, companies and agencies must decide whether to cross difficult terrain by the shortest possible route or add to length in favor of less expensive construction. These decisions obviously require a case-by-case analysis.

When facilities are located closer together, compatibility problems increase while the area of land affected and associated impacts may decrease. When facilities are spaced farther apart, compatibility problems tend to decrease, although the area of land affected, impacts on adjacent land uses, and environmental factors may increase. The problem becomes how to lessen impacts to the natural environment without imposing huge financial burdens on project sponsors.

Land Use, Land Ownership, and Social Issues

The effects corridor planning decisions on public land would have on surrounding state and private lands is a major issue of concern. Some of the conflicts that surface as reactions to a specific project include concerns about: changes in land use and land values, potential interference with existing land use, and possible health effects caused by a new facility.

At times these concerns are in direct contradiction to, or in competition with, one another. Siting decisions must consider the views and values of persons living near a proposed route or corridor, the resource values and land management priorities expressed in federal and state laws, the views and preferences of project sponsors, and the intrinsic values and characteristics of the area crossed. There is no clearly defined line between private landowners and public groups in identifying the issues and resource values that may be of concern. For example, recreationists and sportsmen are concerned with protecting recreation, wildlife, and scenic values. Sometimes these values are in conflict with private land uses such as agriculture. On the other hand, depending on the type of land use, private property values may be tied to the scenic or natural environmental quality of an area. In addition, health concerns may present arguments for siting facilities away from populated areas, but such concerns may be in direct conflict with the concerns of landowners and sportmen's groups.

The challenge in making right-of-way and corridor siting decisions, is to devise effective ways of communicating with landowners and other groups to: (1) identify their concerns; (2) explain how their concerns will be incorporated in the evaluation process; and (3) explain the complex and often conflicting resource and land use values and costs and benefits that must be weighed in reaching right-of-way or corridor decisions.

A CORRIDOR SELECTION PROCESS

Federal law provides the FS and BLM authority to designate areas of federal land as utility and transportation corridors, but does not provide direction for how this is to be accomplished. The State of Montana has no authority to designate corridors but has cooperated with the federal agencies to explore options for fulfilling their legal responsibilities.

Approaches for Corridor Selection

Three approaches for corridor designation are outlined—direct (where facilities can go), indirect (where facilities cannot go), and combination (mixture of direct and indirect). These approaches identify two basic categories of land—one where facilities are allowed, and another where facilities are prohibited. The combination approach also includes a category of unclassified land that would be studied on a case-by-case basis to determine possible routes for a specific facility.

The **direct approach** identifies areas for classification as designated corridors in the form of either long linear segments or short critical segments called windows. Management of these areas would be for use by existing or future linear facilities. This approach seems strong in protecting areas for right-of-way use but weak in protecting against possible land use and land ownership conflicts. Windows appear preferable to long corridors since they can be used more flexibly to consider requirements of specific new linear facilities. Windows also have the advantage of leaving responsibility for facility engineering and planning to project sponsors.

The **indirect approach** identifies areas where facilities cannot or should not be placed through use of exclusion or avoidance areas. Crossings of exclusion areas, (e.g., wilderness areas) would be prohibited, while avoidance areas could be crossed under strict conditions, although by definition they should be avoided. All areas not so classified could potentially accommodate rights-of-way and project sponsors would focus on these areas in planning their facilities. This approach provides

protection to specific resources and land use values. However, total reliance on this approach incurs problems since it may not adequately protect areas critical to right-of-way use and may fail to provide enough direction to land management agencies and industry to meet their respective planning objectives.

The **combination approach** would include identifying windows to protect critical right-of-way areas and identifying exclusion and avoidance areas to protect important natural, cultural, and social values. This approach focuses attention on areas likely to contain acceptable locations for facilities by recognizing sensitive areas that possibly should be eliminated from further study at an early stage. This approach is likely to reduce the cost and time required to evaluate individual facility proposals, and additionally, to allow acceptable or possible corridors to be identified based on natural or manmade constraints.

The disadvantage inherent in all three approaches is that a system for land classification and management of lands such as windows, exclusion areas and/or advoidance areas does not exist. Without such a system the indirect and to a lesser extent the direct combination approach could be difficult to use. Also, agencies would still have to analyze the impacts of specific facilities in areas not identified as a window or an exclusion area or avoidance area. Establishing categories of criteria through which land management agencies can identify exclusion areas, avoidance areas, and acceptable windows may be difficult and costly, although the work of others who have already established such criteria should aid this effort.

In summary, while both the direct and indirect approaches to corridor planning have attractive benefits for protecting either right-of-way areas or specific resources, each alone also exhibits major drawbacks. The combination approach appears to have more advantages than disadvantages because it attempts to balance protection of both right-of-way areas and specific resource values.

Implementation Options

A process is required to determine the need for corridors, accommodate local opinion, safeguard environmental values, expedite the siting process for new facility proposals, and meet state and federal corridor goals and objectives. Since the siting of individual rights-of-way and designating corridors are separate actions, the process must be responsive to both these needs over the short and long term. Automatically deciding that all projected facilities are needed and that they all will require rights-of-way by a certain time could result in overemphasizing corridors at the expense of other land use considerations. On the other hand, it is probable that a certain number of designated corridors will be necessary and it is prudent to plan for them. An acceptable corridor selection process must take the following factors into account: (1) the time and objectives; (2) the acceptability of results of the process; (3) the defensibility of the analysis; and (4) public involvement opportunities.

Two processes were identified for corridor selection based on the combination approach—**Option 1, Study of Single Areas; and Option 2, Phased Identification of Interconnected Windows and Exclusion and Avoidance Areas.**

Option 1 would involve individual study of the existing problem areas identified during the inventory of the existing linear facility situation. This option has drawbacks since no analysis was done initially to identify alternatives to the problem areas which should also be studied. This option could lead to a piecemeal study of only areas that presently exhibit possible conflicts. A variation of this option would involve ranking and studying problem areas and one or two alternatives identified by industry or through exclusion and avoidance criteria. Although this variation includes the study of alternatives, the analysis still might be fragmented. Both option 1 and the variation of option 1 suffer from the following problems: (1) application of exclusion and avoidance criteria would be limited; (2) possible windows and alternative corridor areas outside of those already identified or immediately nearby could possibly be ignored, thereby potentially increasing environmental and social costs of new facilities; (3) windows could be potentially mismatched thereby causing circuitous routing for some facilities; and (4) possible haphazard designation could occur without fully considering the need for such areas. The major advantage of either process is that it could be carried out rather quickly at a reasonably low cost to agencies. The major disadvantage is that either process may discount the questions of necessity, feasibility and appropriateness of areas in selecting candidates for designated corridors.

Option 2 would approach corridor selection by identifying preferred pathways through a system of interconnected windows, exclusion areas, and avoidance areas. Exclusion and avoidance areas would be identified through a set of criteria. Known problem areas (e.g. congested areas) and candidate window areas then would be identified and evaluated according to criteria used to identify exclusion and avoidance areas. Window selection would include an environmental analysis and trade-off of alternatives to determine their suitability as designated corridors. Areas determined unfeasible for windows would be dropped from further study, although at some future time, such areas, and, to some degree, avoidance areas could be reconsidered.

Additional features of Option 2 include: (1) a process for determining the need for any given corridor and, (2) a process for studying candidate windows in interconnected groups that form logical east-west routes across the mountains. In Montana, the need for future rights-of-

way cannot be reliably based on long-term projection. It appears unfeasible to designate corridors based on the assumption that all existing rights-of-way and de facto corridor areas can or should accommodate future rights-of-way. The State of Montana has regulatory requirements which make studies necessary to determine if the need for a linear facility is valid and to further establish that a given facility is the best alternative for meeting that need. This option recognizes that the need for corridor designation and location of future facilities may be so closely interdependent that initial corridor designation decisions probably would occur in the context of siting decisions for specific facilities. This would allow other factors such as compatibility with new or existing facilites, land use issues, and social conflicts to be considered in the designation process.

In summary, Option 2 appears preferable to Option 1 because: (1) exclusion and avoidance area criteria would be developed and applied to define windows, and (2) all identified window areas, problem areas, and alternate areas could then be evaluated to determine suitability, acceptability, and necessity for designation as corridors.

Exclusion area, avoidance area, and window criteria could be developed jointly by federal and state agencies. The criteria would be applied individually by forests and BLM districts to evaluate federal land as exclusion, avoidance, and window areas. A federal/state oversight committee could then evaluate each forest and BLM district plan to ensure that window areas identified individually by the forests and districts were matched—that a window identified on the border of one forest was not isolated, due to the application of criteria on adjacent forests. The oversight committee could also make recommendations concerning the need for designating corridors. The role and authority of the committee needs to be clearly defined. This is essential before the process can be implemented.

Recommendations

1. Continue the principle of intergovernmental cooperation for future corridor planning and right-of-way siting in Montana.

2. Adopt the combined window, exclusion area and avoidance area concept for identifying and selecting corridors in Montana by implementing **Option 2—Phased Identification of Exclusion Areas, Avoidance Areas, and Windows**. Develop criteria for identifying exclusion areas, avoidance areas, and windows. This would include public involvement with recommendations advanced to the Governor, Northern Regional Forester, and Montana State Director of BLM.

3. Incorporate the direction of Recommendation 2 into federal land management planning.

4. Establish joint state and federal Corridor Oversight Committee to review land managment plans and to assure that Montana corridor goals are achieved. The authority and functions of this committee still need to be clearly defined.

5. Develop a common state/federal analysis, evaluation, and decisionmaking process for individual right-of-way proposals under joint jurisdiction of federal and state agencies.

6. Advance Montana's joint corridor planning approach to other federal and state agencies in the West to achieve interstate consistency in right-of-way and corridor decisions.

7. Encourage public participation by distributing a summary of this report to the public for review and comment.

8. Develop the Phase V Right-of-Way Management Program as a separate effort.

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